

DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN OR RELATING TO
 LIQUID DISPENSING APPARATUS

(71) We, GASKELL & CHAMBERS
 (NON-DRIP MEASURE) LIMITED, a British
 Company, of 340, Bensham Lane, Thornton
 Heath, Surrey, do hereby declare the inven-
 5 tion, for which we pray that a patent may be
 granted to us, and the method by which it is
 to be performed, to be particularly described
 in and by the following statement:—

This invention relates to apparatus for dis-
 10 pensing liquids from a bulk supply and is
 concerned particularly with the dispensing of
 milk, squashes and other beverages from
 flexible containers of the type consisting of a
 polythene or similar bag sealed after charg-
 15 ing and normally enclosed in a carton, the
 cartoned bag being fitted with a flexible out-
 let tube and in use being supported within a
 cabinet where dispensing is to be effected
 so that liquid can be delivered directly from
 20 the bag into a cup or the like without coming
 into contact with any other receptacle or
 apparatus.

The general object of the present invention
 is to increase the capacity of a dispensing
 25 machine by mounting two containers of
 beverage therein, for use successively or selec-
 tively, whilst ensuring that a desired controlled
 amount of liquid is dispensed at each opera-
 tion, having regard to the nature and quality
 30 of the liquid, and also ensuring that dis-
 pensing of liquid cannot be effected other
 than when a cup or similar receptacle is cor-
 rectly positioned beneath the discharge outlet.

According to the invention a liquid dis-
 35 pensing machine comprises means adapted to
 accommodate or support two liquid containers
 of the type mentioned and with their outlet
 tubes brought to a common delivery point,
 press button-operated or coin-freed mechanism
 40 for controlling discharge of liquid through
 said tubes, photo electric control means oper-
 able to stop further delivery of liquid to a
 cup placed at the delivery point when liquid

in the cup reaches a predetermined level, and
 means for creating a controlled but adjust-
 45 able time delay in the operation of the photo
 electric control means thereby to determine
 accurately the quantity of liquid dispensed at
 each actuation of the machine.

Reference will now be made to the accom-
 50 panying drawings which illustrate a preferred
 embodiment of the invention and wherein:—

Fig. 1 is a perspective view of the machine
 in its operative condition,

Fig. 2 is a front elevation of the interior
 55 of the cabinet enclosing the mechanism,

Fig. 3 is a fragmentary view of the inner
 side of the cabinet door, and

Fig. 4 is a part sectional side elevation
 60 of the mechanism.

The machine shown comprises a cabinet
 1 providing a refrigerated compartment of a
 size to accommodate two cartoned flexible
 bags 2 of milk or other liquid of the kind
 65 mentioned, the flexible outlet tubes 3 from
 the two bags being led to a common central
 delivery point or station and the discharge
 from each tube being controlled by a separate
 closure device 4, for example of the form
 70 disclosed in our Patent Specification No.
 1,154,931 in which a solenoid-actuated
 spring-loaded presser bar 5 co-operates with
 an abutment 6 to clamp or pinch the tube
 and close off the flow of liquid there-
 75 through.

The cabinet is closed at its front side by
 a hinged door 7 the lower portion of which
 supports on its rear side a casing defining a
 dispensing chamber 8 accessible through an
 aperture in the door and which is preferably
 80 closed by a hinged flap 9. In the arrangement
 shown, the casing is constituted by a box-
 like structure 10 which is inserted from the
 front of the door after lifting the flap 9
 and is secured in position by a nut and bolt
 85 device 11 co-acting with an encircling metal

strap 12 secured to the door. The floor of the casing includes a grid 13 through which spilt liquid may drain but the construction is such as to permit ready replacement of the box 10 when it has become soiled. Supported immediately behind the door above the dispensing chamber 8 is an automatic cup dispenser 14 which in this instance is charged with translucent plastic cups, a cup being delivered each time the machine is operated to the dispensing chamber or delivery point with the aid of a chute or like guide member 15 located in the upper end of the box 10. In this position the cup, indicated at 16, is located beneath the discharge ends of the two outlet tubes 3.

Supported at one side of the dispensing chamber casing is a photo-electric cell 17 whilst at the opposite side of the casing is mounted an exciter lamp 18 for projecting a beam of light across the dispensing chamber and onto the photo-electric cell, appropriate apertures 19 being provided in the side walls of the box 10 and strap 12. The photo-electric cell controls either directly or through a relay the operating solenoids of the closure devices 4, only one of which is operable at a time, the solenoid operating circuit also including a switch actuated by a press button or by coin freed mechanism and having a hold-on circuit associated therewith.

With the apparatus as so far described, insertion of a coin or operation of the press button will initiate a cycle comprising delivery of a cup to the dispensing chamber and then operation of a solenoid-actuated liquid flow control device 4 to deliver milk into the cup, the delivery being stopped when the rising level of milk in the cup breaks the light beam exciting the photo-electric cell. Preferably, a time switch is also provided for ensuring that the solenoid circuit is broken and the mechanism returned to its inoperative condition after a predetermined period.

In practice, it is found that froth on the liquid in the cup can influence that photo-electric control and result in a greater or lesser amount of liquid being delivered than intended. Thus, for example, it is found that fresh milk froths more than milk which has stood for a period, and a further feature of the invention is the provisions of means for delaying the breaking of the solenoid circuit, following the breaking of the light beam, to compensate for any possible short measure due to the presence of or the amount of froth in the cup. Preferably, this delay is achieved by the use of an appropriate electronic delay circuit in the solenoid control, a delay of up to about half-second being generally sufficient. The delay mechanism is enclosed by a casing 20 and the actual delay is variable under control of a rotary switch 21 movable, for example, through ten graduations, and with the aid of such a con-

trol the proprietor is able to set the machine to dispense accurately any particular liquid.

Two zeroising counters 22a, 22b may be operable, one by each solenoid to indicate the amount of liquid remaining in the container controlled by the associated solenoid at any specific time, and to switch off that particular supply when the container is empty, and where both containers are supplying the same kind of beverage, the zeroising of the first counter may be used to switch over the dispensing control automatically to the second container. Where, however, the two containers supply different liquids, e.g. milk and orange squash, a manually-operable change-over switch may be provided on the cabinet by means of which an operator may render either solenoid circuit operative at will to select the required beverage, and the control circuit may automatically illuminate an appropriate notice on the front door of the cabinet when both containers are empty.

WHAT WE CLAIM IS:—

1. Apparatus for dispensing liquids from containers of the type referred to, comprising means for accommodating or supporting two of said containers with their outlet tubes brought to a common delivery point, press button-operated or coin-freed mechanism for controlling discharge of liquid through said tubes, photo electric control means operable to stop further delivery of liquid to a cup placed at the delivery point when liquid in the cup reaches a predetermined level, and means for creating a controlled but adjustable time delay in the operation of the photo electric control means.

2. Apparatus as claimed in Claim 1 and in which the liquid containers are fitted with flexible outlet tubes, wherein the discharge of liquid through the tubes is controlled by a solenoid-operated pinching or clamping device co-acting with each of said tubes.

3. Apparatus as claimed in Claim 2, including a zeroising counter associated with each of said devices, and means associated therewith and operable when one container is emptied to switch over the dispensing control automatically to the other container.

4. Apparatus as claimed in Claim 2, including a manually-operable change-over switch for rendering either clamping device operative and thus providing selection from the two liquid containers.

5. Apparatus as claimed in any of Claims 2—4, including a time switch operable to break the solenoid circuit and stop further delivery of liquid after a predetermined period.

6. Apparatus as claimed in any of Claims 1—5, wherein the liquid containers and dispensing mechanism are housed in a cabinet the front door of which supports a dispensing

chamber, said chamber being constituted by a removable and renewable casing.

7. Apparatus for dispensing liquids from containers of the type referred to, constructed
5 substantially as herein described with reference to the accompanying drawings.

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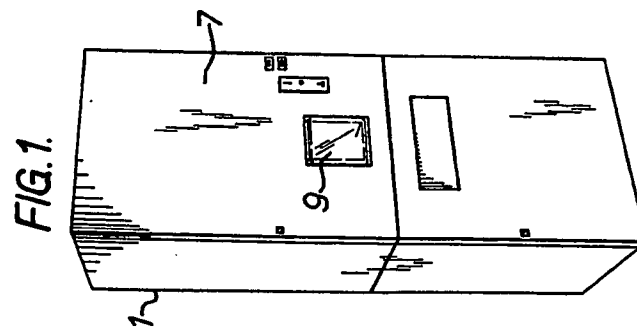
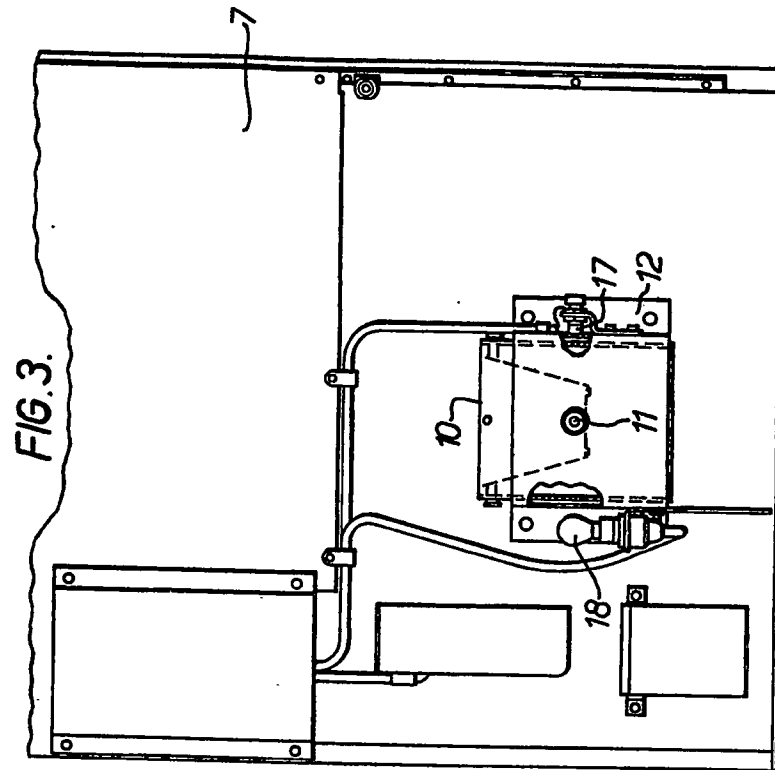


FIG. 2.

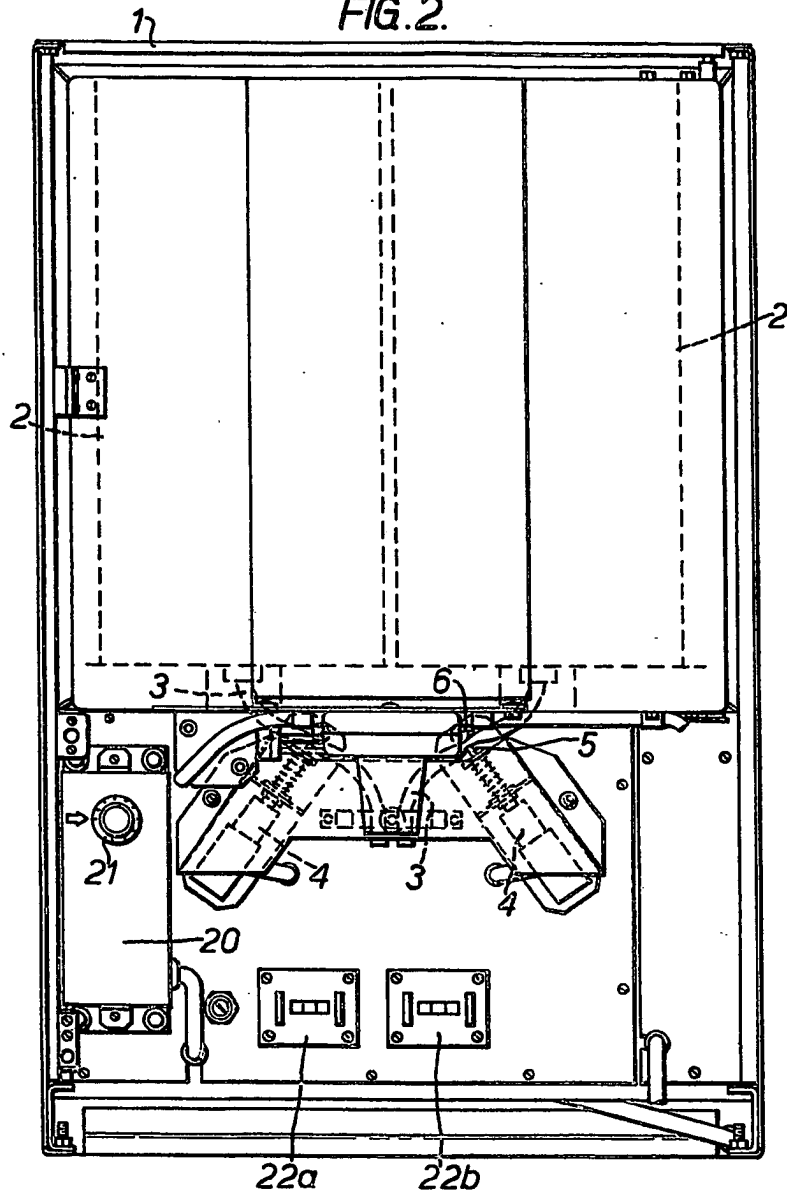


FIG. 4.

